The Changing Relation of Consumer Income and Expenditure

By R. B. Bangs

IT IS a commonplace that modern warfare makes enormous demands upon the productive capacity and resources of a nation. Since the middle of 1940 the American armaments program, which became a war program on December 7, 1941, has been gathering momentum. The output of military equipment which had been realized up to the end of 1941, however, was attained largely from an increase in total production rather than from a diversion of resources from civilian goods production. More labor was drawn into employment, hours of work were extended, existing plant capacity was more fully utilized, and new plants erected for military purposes were brought into production.

Because war production, at least until December 7, was to a large extent supplementary to the output of peacetime goods, these latter products continued to be manufactured in enlarged volume during the year prior to the actual outbreak of hostilities. Hence the basic stimulus from arms expenditures generated a sharp expansion of income, much of which was paid out to individuals in the form of higher wages, salaries, dividends, and increased prices to farm operators. Some of this increase in income naturally was saved but the bulk of it was used by consumers to buy additional goods and services.

So long as war production did not seriously impede the output of consumption goods, this enlargement of the income flow did not pose a major inflationary problem. The relation of aggregate consumer expenditure to total disposable consumer income continued to be about the same as in past years.

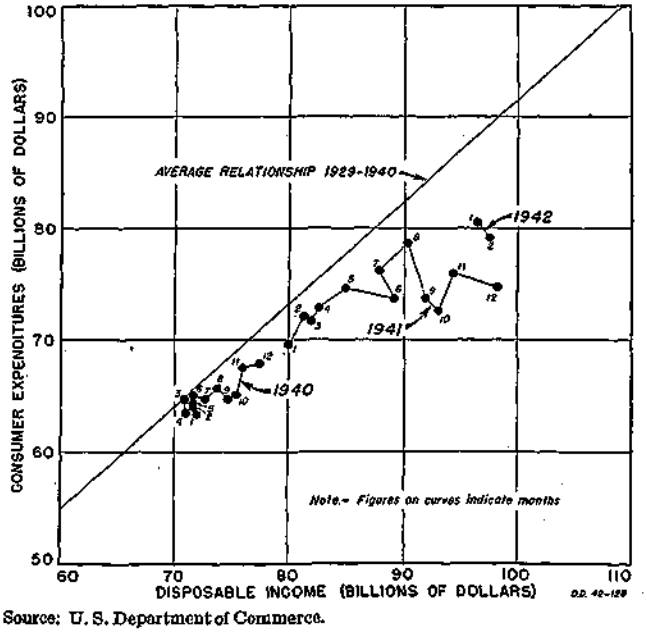
But as the war program grew in size the necessity for restricting output of consumer goods became more evident. Shortages of material, equipment, and transportation and the need to convert industries to a wartime basis forced the curtailment of many lines of civilian production. Yet the incomes of individuals have continued to grow as the war industries have paid out a continually increasing flow of income.

This situation, with consumer income expanding but the supply of goods and services available for consumption contracting, obviously implies an inflationary danger which, in the interests both of a maximum war effort and an equitable distribution of the war burden must be controlled. The problem, apart from the price control and rationing of the very scarce articles, is one of draining away the excess consumer income so that it does not force the prices of available consumption goods and services to unreasonable levels. Increased personal taxes, increased voluntary or forced savings by consumers, and withholding by business enterprises of a part of their proceeds as business savings are all methods of partially removing some of this excess of money income and thus of helping to prevent the development of extreme upward pressure on the retail price structure.

The Relation of Consumption to Income

As a measure of the effect of war on the broad income and expenditure pattern of consumers and for the light that may thus be thrown upon the problem of the size of the inflationary gap, it is important to consider statistical information dealing with the relation of income and consumption. For this purpose we may compare aggregate consumer expenditures for goods and services with the total disposable income of individuals.

Figure 4.—Relationship Between Annual Rate of Monthly Consumer Expenditures and Disposable Income of Individuals, Adjusted for Seasonal Variations



Source: U. S. Department of Commerce.

The Bureau of Foreign and Domestic Commerce regularly prepares estimates of aggregate income payments to individuals, both on an annual and on a monthly basis. Deducting from these figures estimates

of the total direct taxes paid by individuals [1] one can obtain series measuring the disposable income of individuals or the total which in each period is to be distributed between consumption expenditure (including indirect taxes) and savings.

Utilizing information on the composition of the gross national product together with indexes of retail sales one can also obtain estimates, both on an annual and a monthly basis, of aggregate consumer expenditure.[2] These expenditure series may then be compared with the disposable income series to show how the expanding flow of consumer income is being used. On the basis of this comparison we also obtain, as a residual, a series measuring the indicated total volume of net savings by individuals.[3]

Table 1.—Annual Rates of Disposable Income, Consumption Expenditure, and Savings of Individuals

Data Adjusted for Seasonal Variation

[Billions of current dollars]

Year and month	Disposable income	Consumption expenditure	Savings
1940			
January	72.0	63.3	8.7
February	71.6	64.0	7.6
March	70.8	64.6	6.2
April	71.0	63.4	7.6
May	71.6	64.3	7.3
June	71.7	65.0	6.7
July	72.7	64.6	8.1
August	73.7	65.6	8.1
September	74.6	64.6	10.0
October	75.3	65.0	10.3
November	75.9	67.5	8.4
December	77.4	67.9	9.5
1941			
January	80.0	69.6	10.4
February	81.2	72.0	9.2
March	81.8	71.6	10.2
April	82.5	72.8	9.7
May	84.8	74.5	10.3
June	89.1	73.7	15.4
July	87.3	76.2	11.6
August	90.2	78.6	11.6
September	91.8	73.6	18.2
October	93.0	72.6	20.4
November	94.3	75.9	18.4
December	98.2	74.6	23.6
1942			
January	96.4	80.5	15.9
February	97.5	79.1	18.4

Source: Division of Research and Statistics, Bureau of Foreign and Domestic Commerce.

[1] In preparing the estimates of disposable income, direct personal taxes—that is taxes paid by individuals which are not a part of the price of some commodity or service purchased—were deducted from income payments on a collections rather than an accrual basis. This raises no particular problems so long as we use only annual disposable income totals. But in estimating disposable income monthly we should properly subtract monthly tax collections from monthly income payments. Federal monthly tax collections are bunched somewhat around the quarterly tax dates while State and local tax collections also tend to be somewhat uneven, though less so than the Federal collections, due to the variation in fiscal periods among the more than 180,000 State and local government divisions. In the absence of proper data needed to construct a reliable monthly series of all personal direct taxes, we have employed a method which in essence makes these collections proportional to income payments. Needless to say, if a reliable tax collections series could be obtained or if taxes were treated on an accrual rather than a payment basis the monthly disposable income series might be quite different in month-to-month changes.

[2] The National Income Unit of the Division of Research and Statistics is now engaged in preparing comprehensive direct annual estimates of consumer expenditures by measuring the flow of commodities and services passing to consumers. Until this work is completed, however, we can obtain consumer expenditures only from an analysis of the composition of gross national expenditure.

[3] The series designated as the indicated savings of individuals contains in addition to consumer savings the retained net earnings of unincorporated business firms. Prior to 1941 the Bureau of Foreign and Domestic Commerce national income estimates showed as business savings the retained earnings of both corporations and unincorporated establishments. At present, however, the former noncorporate business savings are not shown separately but are lumped with consumer savings. This procedure avoids the troublesome problem of endeavoring to separate the savings of individuals in their consumer and business capacities and is felt to be more realistic than the previous method.

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In table 1 are shown monthly estimates of the dollar volume of individuals' disposable income and consumer expenditure at annual rates for the period beginning January 1940. Both monthly series are corrected for seasonal variation. Since the pattern of seasonal variation which is observable in the two series might well be quite different, it is important also to inspect the seasonally uncorrected data.

Table 2 shows the same data which appear in table 1 save that the series are actual dollar amounts, not annual rates, and are before seasonal adjustment. As can readily be observed from the table, the intra-year peaks and troughs in both the income and expenditure series correspond quite closely so that the general relationship between consumer expenditure and income is very much the same in either the seasonally adjusted or uncorrected cases.

Table 2.—Disposable Income, Consumption Expenditure, and Savings of Individuals

Data Unadjusted for Seasonal Variation

[Millions of current dollars]

Year and month	Disposable income	Consumption expenditure	Savings
1940			
January	5,985	4,790	1,195
February	5,515	4,901	614
March	5,806	5,277	619
April	5,886	5,336	550
May	5,626	5,455	171
June	6,193	5,517	676
July	6,009	5,135	874
August	5,711	5,229	482
September	6,356	5,505	851
October	6,587	5,613	974
November	6,151	5,767	384
December	7,285	6,464	821
Total for year	73,200	64,989	8,211
1941			
January	6,572	5,251	1,321
February	6,254	5,488	766
March	6,849	5,760	1,089
April	6,814	6,222	592
May	6,723	6,293	430
June	7,549	6,283	1,266
July	7,337	6,029	1,308
August	7,144	6,229	915
September	7,916	6,286	1,630
October	8,112	6,260	1,852
November	7,704	6,488	1,216
December	8,914	7,208	1,706
Total for year	87,888	73,797	14,091
1942			
January	7,643	6,076	1,567
February	7,150	5,521	1,629

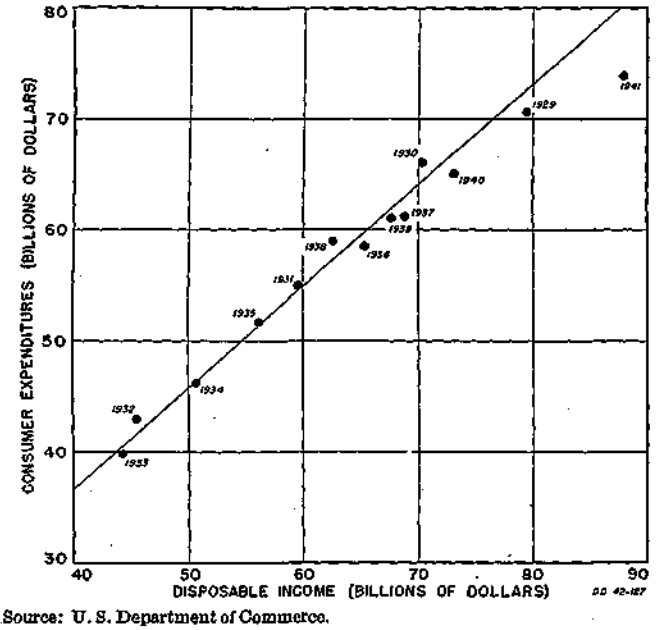
Source: Division of Research and Statistics, Bureau of Foreign and Domestic Commerce.

It is apparent from the tables and from figure 4 that seasonally adjusted consumer expenditure during the fourth quarter of 1941, declined both in dollar volume and, more strikingly, in relation to disposable income. This decline followed a buying wave in the third quarter of the year which was prompted both by the prospect of shortages, of higher prices, and of additional Federal excise taxes. Following a slackening of the buying spurt during the fourth quarter, consumer expenditures in the first 2 months of 1942 have again risen to high levels, due in part to anticipatory buying.

Despite the high dollar volume of consumer expenditure the relation of this total to disposable income

has been unusually low for the last 6 months. Since the difference between disposable income and consumer expenditure measures the indicated savings of individuals, the decline in consumer expenditure has been accompanied by very substantial increases both in the volume and in the rate of saving out of current income. The significance of this recent trend together with its implications for fiscal and economic policy furnish important material for appraising certain current economic developments.

Figure 5.—Relationship Between Consumer Expenditures and Disposable Income of Individuals



Source: U. S. Department of Commerce.

From figure 5 it is apparent that consumer expenditure during the entire year 1941 constituted a somewhat lower percentage of aggregate disposable income than has been characteristic during the past decade. The line of average relationship indicated in figures 4 and 5 was obtained by the conventional least squares technique and fitted to the scatter diagram of annual data covering the period 1929–40, as shown in figure 5. The regression indicates that on the average during the 12-year period increases of each 1 billion dollars in disposable income were accompanied by increases of about 910 million in consumer expenditure and about 90 million in savings. Furthermore this relationship showed a very marked stability over the entire period, as may be observed from figure 5. In recent months, however, the expansion of consumption has been much smaller and the growth of saving much larger relative to the increase in disposable income than in the typical year.

This apparent change in the consumption-income relation must, however, be carefully interpreted. From figure 5 it is apparent that years of rising disposable income generally fall somewhat below the line of average relationship whereas years of falling income customarily lie above it. This suggests that savings are somewhat more cyclical in volume than consumer expenditure. Consumption habits tend to be somewhat inelastic with the result that aggregate consumption expenditure tends to be adjusted somewhat tardily to changes in income. Thus in a period of rising income savings tend to increase at a more rapid rate than consumption while in a falling income period savings tend to decrease at a more rapid rate than consumption.

Since 1941 was a year featured by a very sharp expansion of money income, one would from past experience expect some increase in personal saving in relation to this income rise. But the sharpness of the fall in the consumption-income relation, particularly during the past several months, suggests more than a mere inelasticity of consumption habits. Rather it implies that, with a sizable gap between the quantity of consumer goods available for sale and the quantity of income available for purchase of these goods beginning to appear, the consumer has materially increased savings rather than attempting to dispose of all his increased income in consumers' goods markets.

In terms of relative rates of increase the growth in personal savings during the past several months is even more striking. For this purpose we need to consider the division as between consumption and savings of a given increase in disposable income. Analysis of this sort suggests that in recent months a rather large proportion, roughly 50 percent, of the consumer income expansion has been saved.

It is appropriate to inquire why this apparent change in the relation of consumption to disposable income, which is especially marked during the fourth quarter of 1941, has taken place. A number of factors may be mentioned as contributing to this important change.

Most important among these factors has been the growing scarcity of consumers' durable goods. This scarcity has necessarily restricted the volume of consumer spending on such goods, and this tendency has probably been strengthened by the restrictions which were placed upon installment buying after September 1, 1941. The effect of these factors was reflected in the sharp decrease in retail sales of durable goods stores in the late months of 1941. It is quite evident from available data that the decrease in durable goods expenditures has not been offset by increased purchases of other goods and services with the result that savings have been increased. No doubt, the necessity of continuing payment on outstanding installment contracts at a time when the creation of new contracts was restricted by the limited availability of durable consumers' goods also had a significant effect upon the volume of net savings.

Secondly, some part of the increase in the indicated rate of saving by individuals is undoubtedly traceable to tax anticipation. Higher tax rates on 1941 income, coupled with the prospect of very much higher taxes in 1942, have doubtless encouraged considerable additional saving. In the middle income brackets the

increase in income taxes on 1941 income has been relatively large and this fact has probably prompted temporary saving of appreciable sums part of which were disbursed on the March 15 quarterly tax date. Thus, tax provision explains a part of the increase in indicated personal savings which is apparent during the latter half of last year. This is in contrast to previous years since it is doubtful whether most moderate income receivers have in years prior to 1941 systematically accrued reserves for income taxes.

A third factor partially explaining the increase in saving and the decline in consumers' expenditure observable during recent months is the Treasury campaign to distribute defense bonds and stamps. During the last half of 1941 outstandings of United States Savings bonds increased by more than $1.8 billions. Not all of this increase represented additional saving since in many cases persons merely drew on previously accumulated cash balances or used savings which otherwise would have been held in some other form in order to purchase defense bonds. Even making a substantial allowance for the extent of this substitution of one form of saving for another, it is probable that the defense savings campaign resulted in a sizable increase in net saving during 1941.

Furthermore, there is evidence that the volume of spending has been held in check by consumer resistance to rising prices. While this factor is difficult to evaluate, the fact that inventories of quite scarce consumers' goods are still available in the face of adequate purchasing power in the hands of consumers implies that price consciousness is of more than negligible importance.

A final reason for the increased proportion of consumer income saved during recent months is undoubtedly the uncertainty of many people concerning the future security of their incomes. The possible spread of priorities unemployment, the expansion of the armed forces, and the general uncertainty about the post-war economic situation all provide obvious incentives for accumulating a reserve. Savings of this type are apt to be held either in cash, in bank deposits, or in some similar relatively liquid form. As evidence that this motive for saving may have been of some importance during the past year, it is interesting to note that the cash holdings of individuals have risen very sharply over previous year levels.

The Real Volume of Consumption.

The estimates of consumer income and expenditure which were presented in table 1 were in terms of current dollars. With prices rising, the estimates of consumer expenditure in current dollars overstate the actual increase in physical volume of consumption goods sold, reflecting in part the increased cost of obtaining the same volume of goods and services which were previously consumed. During the past year prices of consumption goods have been rising steadily. The Bureau of Labor Statistics monthly cost-of-living index shows a 10 percent rise between January and December of 1941 and prices of commodities bought by farmers increased by 8 percent.

Table 3.—Division of Consumer Expenditures Between Real Consumption and Change in Cost of Living

Monthly Data in Annual Rates, Adjusted for Seasonal Variation

[Billions of dollars]

Year and month	Consumption expenditure in current dollars	Consumption expenditure in 1935–39 dollars	Consumption expenditure accounted for by change in cost of living
1940			
January	63.3	63.6	−0.3
February	64.0	63.9	0.1
March	64.6	64.7	−0.1
April	63.4	63.4	0.0
May	64.3	64.2	0.1
June	65.0	64.7	0.3
July	64.6	64.4	0.2
August	65.6	65.6	0.0
September	64.6	64.3	0.3
October	65.0	64.9	0.1
November	67.5	66.8	0.7
December	67.9	67.4	0.5
1941			
January	69.6	69.0	0.6
February	72.0	71.4	0.6
March	71.6	70.8	0.8
April	72.8	71.2	1.6
May	74.5	72.4	2.1
June	73.7	70.5	3.2
July	76.2	72.2	4.0
August	78.6	74.0	4.6
September	73.6	68.1	5.5
October	72.6	66.4	6.2
November	75.9	68.9	7.0
December	74.6	67.5	7.1
1942			
January	80.5	71.9	8.6
February	79.1	70.2	8.9

Source: Division of Research and Statistics, Bureau of Foreign and Domestic Commerce.

As a measure of the volume of real consumption there are presented in table 3 figures showing the annual rates of aggregate consumer expenditures both in current and in average 1935–39 dollars. The difference between the two annual rates for any month measures the extent to which the cost of the volume of real consumer expenditure in that month, also at an annual rate, was higher than in 1935–39. Thus we have, in table 3, attempted to divide the money stream of consumer expenditure as between one part which has been matched by an increased flow of goods and services and another part which has from the standpoint of consumers as a whole been dissipated in higher prices. Since civilian supply becomes, as we approach capacity, a residual determined both by total production and by military requirements, it is independent in total of the money volume of consumer expenditure. The latter determines only, in real terms, the manner in which available supplies are divided among the group of consumers.

It is apparent from this table that despite the substantial increase in real consumer expenditure through the first 8 months of 1941, the continued high dollar volumes of consumption expenditures since that period have been attributable to rising prices. The physical volume of consumer purchases since September has

been well below the early months of 1941. Although prices of consumer goods were held well in check during 1940, in 1941 the trend was steadily upward and an apparently increasing rate is observable. Whether this trend will continue undiminished during 1942 must depend both on the adequacy of the fiscal measures taken to reduce the excess of consumer income and on the success of the retail price control actions which are taken during the current year.

Significance of the Changing Income-Expenditure Ratio

As the war program grows the danger that the increase in consumer income will press ever harder on prices is readily apparent. If this pressure becomes too great it may jeopardize the success of the price control plan and make imperative the adoption of drastic fiscal repressions such as withholding taxes or compulsory saving. It is generally recognized that the inflationary gap in 1942 will be large but the behavior of the expenditure-income relation and the rapid growth in the rate of saving by individuals during recent months is an encouraging sign suggesting that the gap may well prove to be somewhat smaller than has been forecast by some estimators. However, the spillover of excess consumer income is still much too large and it would be unrealistic to hope that the increase in voluntary saving will, by itself, be sufficient to close the gap. At best we may expect only a partial narrowing of the gap to result from the present trend of voluntary saving. Complete closure will require supplementary measures.

Notes on Derivation of the Estimates

The annual estimates of consumer expenditures and of disposable income of consumers for the period 1929–41 are a by-product of the studies of the composition of the gross national product.[1] Annual figures for consumer expenditures during these years were obtained as a residual by subtracting government purchases of goods and services and capital formation by business enterprises from the total gross national product valued at market prices. Annual estimates of the disposable income of consumers were obtained by subtracting total personal taxes, estimated on a payment basis, from the annual estimates of aggregate income payments to individuals.

The monthly estimates of disposable income for 1940 and 1941 were obtained by interpolating between the annual figures, using the monthly indexes of income payments. These monthly figures were obtained both adjusted for seasonal variation and seasonally uncorrected. The seasonally adjusted figures were then converted to annual rates.

The monthly estimates of consumer expenditures were obtained in the following manner. Annual figures for total consumer expenditures were first broken down into (a) expenditures for durable goods, (b) expenditures for nondurable commodities, and (c) expenditures for services. This breakdown was made on the basis of unpublished data now being prepared in the National Income Unit, Division of Research and Statistics. These separate components were then interpolated by means of monthly indexes of (a) retail sales of durable goods stores, (b) retail sales of nondurable goods stores, and (c) service expenditures. Both seasonally adjusted and uncorrected indexes were employed. The resulting seasonally corrected monthly totals for aggregate consumer expenditures were then expressed as annual rates.

The average relationship between consumer expenditures and disposable income was obtained by fitting a least squares regression line to the annual data, omitting for this purpose the year 1941 so as to eliminate the effects of war expenditure. For the period 1929–40 the resulting first degree regression equation, denoting consumer expenditure by y and disposable income by x, was

$$y=0.914x$$

This line is indicated in figures 4 and 5.

[1] The annual estimates of gross national product and its composition will be published in the near future.